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THE
EFFECT OF FLUIDS
ON THE
STRENGTH OF CATGUT.

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THE EFFECT OF FLUIDS ON THE STRENGTH OF CATGUT.

IN view of the different methods employed by surgeons in using catgut ligatures, I have thought it might be of some interest to test the strength of catgut after immersion in water and alcoholic solutions.

Two bottles of the prepared gut were selected. In one the gut was preserved in sublimated alcohol and in the other in juniper oil. Each bottle contained three sizes of the gut, No. 1 being the smallest, No. 2 medium, and No. 3 the largest size. The length of time of immersion in each case in the different solutions varied from twenty to forty minutes, or the time generally consumed in ordinary operations. The length of gut was in each case eight inches,—two inches for fastening and six inches for traction. The number of pounds required to overcome the resistance offered by the catgut was indicated by a graduated scale, care being taken to make traction in the direct line with the scale. The traction was a steady pull, the length of time before breaking being indicated by means of a stop-watch. No doubt some variation in the textile strength of the gut was due to inequality in the size of the



	Minutes of time the catgut was exposed.	Sublimated alcohol.		Juniper oil.	
		Amount of trac- tions in pounds.	Time of breaking, in fractions of a minute.	Amount of trac- tion in pounds.	Time of breaking, in fraction of a minute.
Size of catgut used.....	...	1	3	1	1
Prepared catgut.....	...	3 $\frac{1}{2}$	16	2	2
Pure alcohol.....	{ 20	4 $\frac{1}{2}$	17 $\frac{1}{2}$	3	3
Alcohol and carbolic (1 to 40) acid, equal parts	{ 40	5	17 $\frac{1}{2}$	21 $\frac{1}{2}$	1 m.
Corrosive sublimate and alcohol, equal parts...	{ 20	4 $\frac{1}{2}$	19	26	1 $\frac{1}{2}$
Corrosive sublimate (1 to 1000), aq. sol.....	{ 40	5 $\frac{1}{2}$	14	21	1 $\frac{1}{2}$
Boiled water.....	{ 20	...	...	20	1 $\frac{1}{2}$
	{ 40	...	...	16	1 $\frac{1}{2}$
		...	...	14 $\frac{1}{2}$	1 $\frac{1}{2}$
		...	...	8	1 $\frac{1}{2}$
		...	...	8 $\frac{1}{2}$	1 $\frac{1}{2}$
		...	...	7 $\frac{1}{2}$	1 $\frac{1}{2}$
		2	13	6 $\frac{1}{2}$	1 $\frac{1}{2}$
		2 $\frac{1}{2}$	11 $\frac{1}{2}$	6	1 $\frac{1}{2}$

Solutions used.

gut used. In fact, this was proved by several comparative tests.

The experiments showed that all aqueous solutions incline to greatly diminish the strength of gut, and that the longer the immersion the greater the diminution in strength. The result from immersion in boiled water showed the greatest diminution. In pure alcohol an increase in strength was observed in direct ratio with the time of exposure. Alcohol and carbolic acid solution had very little effect. After twenty to forty minutes the strength was somewhat lessened. It was found that the catgut taken from the juniper oil, when subjected to the different solutions, showed better results than did that taken from the sublimate solution. All sublimated solutions were found to lessen the strength of the catgut.

The table opposite shows the result of experiments.

